MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2016/2017

BFN3144 – FINANCIAL DERIVATIVES

(All sections / Groups)

7 OCTOBER 2016
3.00 P.M- 5.00 P.M.
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This question paper consists of 4 pages. There are a total of **4** questions.
2. Answer **ALL** questions.
3. Marks are shown at the end of each question.

Answer all questions in the answer booklet provided.

QUESTION 1 (25 marks)

(A) For each of the following statements, explain your strategy whether to long or short the futures contracts. Given the available futures and option products traded under Bursa Malaysia Derivatives, name the particular futures contract to be used.

(i) ABC bank has both asset-bearing assets and liabilities. It has more interest-bearing liabilities than assets. The bank predicts that the central bank will increase the interest rates. (4 marks)

(ii) Eco Mint Berhad predicts that there will be a flow of fund of RM10 million in three months' time for investment. The company predicts that interest rate may move down. (4 marks)

(iii) You are a fund manager managing a stock portfolio of RM10 million. In view of current bearish economic sentiment, you want to hedge your portfolio with option. (4 marks)

(B) Explain the differences between writing covered and naked calls. Are risks involved in these strategies similar or different? (8 marks)

(C) Under option trading, which party is required to pay margin? Why? (5 marks)

QUESTION 2 (25 marks)

(A) A trader who is long RM12 million of Malaysian stocks goes long KLCI Calls and short KLCI puts (both the calls and puts are at-the-money).

(i) Can this be considered a hedge position? (5 marks)

(ii) To make profit, what must his expectation of the underlying market be? (5 marks)

(iii) What is likely to happen if the market moves down? (3 marks)

Continued...

(B) Discuss Put-Call parity function. The stock, Titan Nasional (TN) Bhd. is currently trading at RM15.00. Three-month call and put options on TN stocks with RM15.00 exercise price are being quoted at RM0.75 and RM0.19 respectively. The risk-free rate is 12% per annum. Using the Put-Call parity, prove that there is mispricing.
(12 marks)

QUESTION 3 (25 marks)

(A) Black Scholes option pricing model is a continuous time model and it is built on some assumptions. Briefly discuss any three assumptions under the Black Scholes model.
(6 marks)

(B) THREE steps are used to calculate option price under Black Scholes option pricing model. Briefly explain the steps. Given the information below, calculate the call value by following the steps explained.

Stock price	= RM12
Exercise price	= RM11
Time to expiration (90 days)	= 0.25
Interest rate	= 0.10
Standard deviation	= 0.40

(11 marks)

(C) Explain the four Greek letters-Delta, Theta, Rho and Vega used in option.
(8 marks)

QUESTION 4 (25 marks)

(A) The information below is taken from the website-myfinance.

"Credit Default Swaps and Sovereign Credit Rating

By: Cherry Wong | 24 March 2016

Rating agency ratings are assigned based on a collective basket of quantifiable economic fundamentals. However, in reality, issuers of debt papers are often challenged by forces based on market and investors' sentiment and perception of areas of a country's development namely political and social development which may have future implications on the country's economic direction.

Continued...

	Country	CDS spread [Bp]	Ann. PD [%]	Last CDS Date
1.0	Venezuela	7789	20.0	13/1/2016
2.0	Ukraine	1892	15.9	12/10/2015
3.0	Egypt	492	6.7	13/1/2016
4.0	Brazil	491	6.7	13/1/2016
5.0	Russia	352	5.1	13/1/2016
6.0	South Africa	342	5.0	13/1/2016
7.0	Kazakhstan	310	4.6	13/1/2016
8.0	Croatia	296	4.4	13/1/2016
9.0	Turkey	293	4.3	13/1/2016
10.0	Colombia	283	4.2	13/1/2016
11.0	Indonesia	236	3.6	13/1/2016
12.0	Peru	213	3.3	13/1/2016
13.0	Panama	202	3.1	13/1/2016
14.0	Malaysia	198	3.0	13/1/2016
15.0	Mexico	192	3.0	13/1/2016
16.0	Portugal	188	2.9	13/1/2016
17.0	Bulgaria	168	2.6	13/1/2016
18.0	Hungary	164	2.6	13/1/2016
19.0	Thailand	149	2.3	13/1/2016
20.0	Chile	142	2.2	13/1/2016

Credit default swap (CDS) implies sovereign default probabilities. Credit-default swaps (CDS), the cost to insure Malaysian sovereign bonds, were pushed up twice as much as those for lower-rated Indonesia, reaching the highest level since 2009."

Source: Cherry Wong (2016). Credit Default Swaps and Sovereign Credit Rating. MyFinance. Website: http://www.myfinance.com.my/articles/details/credit-default-swaps-and-sovereign-credit-rating

Explain credit default swap. What are the pros and cons of using credit default swap? (12 marks)

(B) Under an interest rate swap, XYZ Inc. pays a fixed rate 7.20 % per annum on a semi-annual basis and received from ABC Inc. LIBOR + 0.3%. The current six-month LIBOR rate is 6.40% per annum. The notional principal is RM35 million. Calculate the net first payment (Assume one year is 360 days). (9 marks)

(C) Differentiate between notional and market value. (4 marks)

End of Page

Table: Cumulative Normal Distribution

d	N(d)	d	N(d)	d	N(d)	d	N(d)	d	N(d)	d	N(d)
-3.00	.0013	-1.58	.0571	-0.76	.2236	0.06	.5239	0.86	.8051	1.66	.9515
-2.95	.0016	-1.56	.0594	-0.74	.2297	0.08	.5319	0.88	.8106	1.68	.9535
-2.90	.0019	-1.54	.0618	-0.72	.2358	0.10	.5398	0.90	.8159	1.70	.9554
-2.85	.0022	-1.52	.0643	-0.70	.2420	0.12	.5478	0.92	.8212	1.72	.9573
-2.80	.0026	-1.50	.0668	-0.68	.2483	0.14	.5557	0.94	.8264	1.74	.9591
-2.75	.0030	-1.48	.0694	-0.66	.2546	0.16	.5636	0.96	.8315	1.76	.9608
-2.70	.0035	-1.46	.0721	-0.64	.2611	0.18	.5714	0.98	.8365	1.78	.9625
-2.65	.0040	-1.44	.0749	-0.62	.2676	0.20	.5793	1.00	.8414	1.80	.9641
-2.60	.0047	-1.42	.0778	-0.60	.2743	0.22	.5871	1.02	.8461	1.82	.9656
-2.55	.0054	-1.40	.0808	-0.58	.2810	0.24	.5948	1.04	.8508	1.84	.9671
-2.50	.0062	-1.38	.0838	-0.56	.2877	0.26	.6026	1.06	.8554	1.86	.9686
-2.45	.0071	-1.36	.0869	-0.54	.2946	0.28	.6103	1.08	.8599	1.88	.9699
-2.40	.0082	-1.34	.0901	-0.52	.3015	0.30	.6179	1.10	.8643	1.90	.9713
-2.35	.0094	-1.32	.0934	-0.50	.3085	0.32	.6255	1.12	.8686	1.92	.9726
-2.30	.0107	-1.30	.0968	-0.48	.3156	0.34	.6331	1.14	.8729	1.94	.9738
-2.25	.0122	-1.28	.1003	-0.46	.3228	0.36	.6406	1.16	.8770	1.96	.9750
-2.20	.0139	-1.26	.1038	-0.44	.3300	0.38	.6480	1.18	.8810	1.98	.9761
-2.15	.0158	-1.24	.1075	-0.42	.3373	0.40	.6554	1.20	.8849	2.00	.9772
-2.10	.0179	-1.22	.1112	-0.40	.3446	0.42	.6628	1.22	.8888	2.05	.9798
-2.05	.0202	-1.20	.1151	-0.38	.3520	0.44	.6700	1.24	.8925	2.10	.9821
-2.00	.0228	-1.18	.1190	-0.36	.3594	0.46	.6773	1.26	.8962	2.15	.9842
-1.98	.0239	-1.16	.1230	-0.34	.3669	0.48	.6844	1.28	.8997	2.20	.9861
-1.96	.0250	-1.14	.1271	-0.32	.3745	0.50	.6915	1.30	.9032	2.25	.9878
-1.94	.0262	-1.12	.1314	-0.30	.3821	0.52	.6985	1.32	.9066	2.30	.9893
-1.92	.0274	-1.10	.1357	-0.28	.3897	0.54	.7054	1.34	.9099	2.35	.9906
-1.90	.0287	-1.08	.1401	-0.26	.3974	0.56	.7123	1.36	.9131	2.40	.9918
-1.88	.0301	-1.06	.1446	-0.24	.4052	0.58	.7191	1.38	.9162	2.45	.9929
-1.86	.0314	-1.04	.1492	-0.22	.4129	0.60	.7258	1.40	.9192	2.50	.9938
-1.84	.0329	-1.02	.1539	-0.20	.4207	0.62	.7324	1.42	.9222	2.55	.9946
-1.82	.0344	-1.00	.1587	-0.18	.4286	0.64	.7389	1.44	.9251	2.60	.9953
-1.80	.0359	-0.98	.1635	-0.16	.4365	0.66	.7454	1.46	.9279	2.65	.9960
-1.78	.0375	-0.96	.1685	-0.14	.4443	0.68	.7518	1.48	.9306	2.70	.9965
-1.76	.0392	-0.94	.1736	-0.12	.4523	0.70	.7580	1.50	.9332	2.75	.9970
-1.74	.0409	-0.92	.1788	-0.10	.4602	0.72	.7642	1.52	.9357	2.80	.9974
-1.72	.0427	-0.90	.1841	-0.08	.4681	0.74	.7704	1.54	.9382	2.85	.9978
-1.70	.0446	-0.88	.1894	-0.06	.4761	0.76	.7764	1.56	.9406	2.90	.9981
-1.68	.0465	-0.86	.1949	-0.04	.4841	0.78	.7823	1.58	.9429	2.95	.9984
-1.66	.0485	-0.84	.2005	-0.02	.4920	0.80	.7882	1.60	.9452	3.00	.9986
-1.64	.0505	-0.82	.2061	0.00	.5000	0.82	.7939	1.62	.9474	3.05	.9989
-1.62	.0526	-0.80	.2119	0.02	.5080	0.84	.7996	1.64	.9495		
-1.60	.0548	-0.78	.2177	0.04	.5160						

This table shows the probability [N(*d*)] of observing a value less than or equal to *d*. For example, as illustrated, if *d* is -.24, then N(*d*) is .4052.